

program flow that do not necessarily lend themselves to flowcharting may be devised. In particular, each task discussed herein may be interrupted to permit program flow to perform background or other tasks. In addition, the specific order of tasks may be changed, and the specific techniques used to implement the tasks may differ from system to system. These and other changes and modifications which are obvious to those skilled in the art are intended to be included within the scope of the present invention.

What is claimed is:

1. A method of locating a locatable unit using a locator unit which moves relative to said locatable unit, said method comprising the steps of:

transmitting a first signal from a first one of said locator and locatable units;

receiving said first signal at a second one of said locator and locatable units;

estimating, at said second unit, a Doppler component of said received first signal, said step using a preset frequency from a preset estimate table as adjusted by subsequent signals from said first one of said locator and locatable units to said second one of said locator and locatable units, said preset frequency being an approximation of propagation characteristics of said first signal;

transmitting a second signal from said second unit, said second signal being modulated to convey data which describe said estimated Doppler component of said first signal;

receiving said second signal at said first unit;

measuring, at said first unit, a frequency offset between a frequency at which said second signal is received at said first unit and a predetermined frequency, said predetermined frequency being reserved for transmission of said second signal; and

determining a position for said locatable unit in response to said estimated Doppler component received at said first unit as transmitted in said second signal and said frequency offset as measured in said measuring step, said estimated Doppler component and said frequency offset defining a curve whereon said position is located.

2. A method of locating a locatable unit as claimed in claim 1 additionally comprising the step of determining a frequency at which said second signal may be transmitted from said second unit so that said second signal will exhibit said predetermined frequency when received at said first unit.

3. A method of locating a locatable unit as claimed in claim 1 wherein:

said estimating step additionally estimates a propagation duration using a preset duration from said preset estimate table as adjusted by subsequent signals from said first one of said locator and locatable units to said second one of said locator and locatable units, said preset duration being an approximation of propagation characteristics required for said first signal to propagate between said first and second units;

said transmitting a second signal step comprises the step of modulating said second signal to additionally convey data which describe said estimated propagation duration of said first signal;

said measuring step comprises the step of identifying a timing offset between a point in time at which said second signal is received at said first unit and a predetermined point in time, said predetermined point in

time being defined by a framing duration of said first unit; and

said determining step is configured to determine said position for said locatable unit in response to said estimated propagation duration and said timing offset.

4. A method of locating a locatable unit as claimed in claim 1 wherein said determining step comprises the step of obtaining an integrated Doppler parameter, said integrated Doppler parameter being approximately said estimated Doppler component plus one-half of said frequency offset.

5. A method of locating a locatable unit as claimed in claim 1 wherein said determining step comprises the step of obtaining data describing a time at which said estimated Doppler component and said frequency offset are valid, said data being configured to define said time as occurring between said transmitting a first signal step and said receiving a second signal step.

6. A method of locating a locatable unit as claimed in claim 5 wherein said determining step comprises the step of configuring said data to define said time as occurring approximately half way between said transmitting a first signal step and said receiving a second signal step.

7. A method of locating a locatable unit as claimed in claim 1 additionally comprising the step of causing said locator unit to move in an orbit around the earth.

8. A method of locating a locatable unit as claimed in claim 1 wherein said method additionally comprises, prior to said transmitting said first signal step, the steps of:

estimating, at said second unit, an acquisition Doppler component;

transmitting, from said second unit, a third signal at a frequency responsive to said acquisition Doppler component, said second unit initiating said method of locating by transmitting said third signal prior to transmission of said first signal; and

measuring, at said first unit, an intermediate frequency offset between a frequency at which said third signal is received at said first unit and a predetermined reverse acquisition frequency.

9. A method of locating a locatable unit as claimed in claim 8 wherein:

said transmitting said first signal step comprises the step of encoding said first signal to convey data describing said intermediate frequency offset;

said receiving said first signal step comprises the step of obtaining data describing said intermediate frequency offset from said first signal; and

said first signal Doppler estimating step comprises the step of defining said estimated Doppler component to be the difference between a predetermined forward communication frequency and said received frequency, compensated by said intermediate frequency offset.

10. A method of operating a locatable unit in connection with a locator unit which moves relative to said locatable unit, said method comprising the steps of:

receiving a first signal at said locatable unit;

estimating a Doppler component of said first signal, said step using a preset frequency from a preset estimate table as adjusted by subsequent signals from said first one of said locator and locatable units to said second one of said locator and locatable units, said preset frequency being an approximation of propagation characteristics of said first signal;

determining a frequency at which a second signal may be transmitted from said locatable unit so that said second